IN THE CLAIMS:

1. (Original) A method of transmitting a plurality of electrogram (EGM) signals associated with an implantable medical device (IMD) via a telephone line, the method comprising the steps of:

receiving first and second EGM signals from the IMD;

frequency modulating the first and second EGM signals; and

transmitting the frequency modulated first and second EGM signals onto the telephone line.

2. (Original) The method of Claim 1, further comprising:

receiving one or more sense signals, each sense signal representative of sensed physiological activity;

frequency modulating each of the sense signals; and

selectively transmitting the frequency modulated sense signals onto the telephone line substantially simultaneously with the first and second EGM signals.

3. (Original) The method of Claim 2, wherein the sensed physiological activity includes at least one of a sensed atrial activity and a sensed ventricular activity.

4. (Original) The method of Claim 1, further comprising:

receiving one or more stimulus signals, each stimulus signal representative of a physiological stimulus supplied by the IMD;

frequency modulating each of the stimulus signals; and

selectively transmitting the frequency modulated stimulus signals onto the telephone line substantially simultaneously with the first and second EGM signals.

5. (Original) The method of Claim 4, wherein the physiological stimulus includes at least one of an atrial stimulus and a ventricular stimulus.

6. (Original) The method of Claim 1, further comprising:

receiving one or more sense signals and one or more stimulus signals, each sense signal representative of sensed physiological activity;

receiving one or more stimulus signals, each stimulus signal representative of a physiological stimulus supplied by the IMD;

frequency modulating each of the sense signals;

frequency modulating each of the stimulus signals; and

selectively transmitting the frequency modulated sense signals and the frequency modulated stimulus signals onto the telephone line substantially simultaneously with the first and second EGM signals.

7. (Original) The method of Claim 1, further comprising:

receiving one or more electrocardiogram (ECG) signals;

frequency modulating the electrocardiogram signals; and

selectively transmitting the frequency modulated ECG signals onto the telephone line substantially simultaneously with the first and second EGM signals.

8. (Original) The method of Claim 1, further comprising:

combining the frequency modulated first and second EGM signals to obtain a composite FM signal; and

transmitting the composite FM signal onto the telephone line.

9. (Original) An implant monitor for monitoring an implantable medical device (IMD), the monitor comprising:

an RF receiver adapted to receive an RF signal transmitted from the IMD, the RF signal modulated with at least first and second electrogram (EGM) data, the RF receiver configured to demodulate the first and second EGM data from the received RF signal;

a frequency modulation circuit coupled to receive the demodulated first and second EGM data and a substantially fixed-frequency signal and configured to frequency modulate the fixed-frequency signal based on the demodulated first and second EGM data and supply first and second frequency modulated EGM data signals; and

an amplifier circuit coupled to receive the first and second frequency modulated EGM data signals and configured to supply a composite frequency modulated signal.

10. (Original) The monitor of Claim 9, wherein:

the RF signal is further modulated with data representative of sensed physiological activity;

the RF receiver is further configured to demodulate the sensed physiological activity data from the received RF signal; and

the monitor further comprises a marker encoder coupled to receive the demodulated physiological activity data and configured to supply an encoded marker signal that includes data representative of physiological activity type and relative time of occurrence thereof.

11. (Original) The monitor circuit of Claim 10, wherein the frequency modulation circuit is further coupled to receive the encoded marker signal and is further configured to frequency modulate the fixed frequency signal based on the encoded marker signal and supply a frequency modulated marker signal.

12. (Original) The monitor of Claim 9, wherein:

the RF signal is further encoded with data representative of real-time physiological stimulus signals generated by the IMD;

the RF receiver is further configured to decode the real-time physiological stimulus signal data from the received RF signal; and

the monitor further comprises:

a marker encoder coupled to receive the decoded real-time physiological stimulus signal data and configured to supply encoded marker signal that includes data representative of physiological stimulus type and relative time of occurrence thereof.

13. (Original) The monitor of Claim 12, wherein the frequency modulation circuit is further coupled to receive the encoded marker signal and is further configured to modulate the fixed-frequency signal based on the encoded marker signal and supply a frequency modulated marker signal.

14. (Original) The monitor of Claim 9, wherein:

the RF signal is further encoded with data representative of (i) sensed physiological activity and (ii) physiological stimulus signals generated by the IMD;

the RF receiver is further configured to decode (i) the sensed physiological activity data and (ii) the physiological stimulus signal data from the received RF signal; and

the monitor further comprises:

a marker encoder coupled to receive the decoded physiological activity data and the decoded physiological stimulus signal data and configured to supply an encoded marker signal that includes data representative of physiological activity type, physiological stimulus type, and relative time of occurrence thereof, respectively.

15. (Original) The monitor of Claim 14, wherein the frequency modulation circuit is further coupled to receive the encoded marker signal and is further configured to modulate the fixed-frequency signal based on the encoded marker signal and supply a frequency modulated marker signal.

16. (Original) The monitor of Claim 15, further comprising:

one or more pair of electrocardiogram (ECG) electrodes coupled the RF receiver and configured to supply analog surface ECG signals,

wherein:

the RF receiver is further adapted to receive analog electrocardiogram (ECG) signals and supply digital ECG data values representative thereof, and

the frequency modulation circuit is further coupled to receive the digital ECG data values and the substantially fixed-frequency signal and is further configured to frequency modulate the fixed-frequency signal based on the digital ECG data values and supply frequency modulated ECG data to the amplifier circuit.

17. (Original) The monitor of Claim 16, further comprising:

a dual-tone multi-frequency (DTMF) controller coupled to the RF receiver, the DTMF controller adapted to receive DTMF signals from a telephone line and operable, in response thereto, to selectively supply operator command signals,

wherein the RF receiver is further operable, in response to the operator command signals, to selectively supply the digital ECG data values to the frequency modulation circuit.

18. (Original) The monitor of Claim 9, wherein the RF receiver comprises:

a telemetry interface adapted to receive the modulated RF signals transmitted from the IMD and configured to demodulate one or more data frames therefrom, each data frame including at least the first and second EGM data;

a frame decoder circuit coupled to receive the demodulated data frames and configured to extract the first and second EGM data therefrom, respectively;

a sample-rate oscillator circuit operable to supply data sample command signals;

first and second EGM data buffer circuits in operable communication with the frame decoder, each EGM data buffer coupled to receive the data sample

command signals and operable, in response thereto, to selectively retrieve the first and second EGM data, respectively, from the frame decoder.

19. (Original) The monitor of Claim 18, wherein the frequency modulation circuit comprises:

fixed-frequency oscillator circuit operable to supply the substantially fixed-frequency signal;

first and second EGM frequency converters coupled to receive the first and second EGM data from the first and second data buffers, respectively, and further coupled to receive the fixed-frequency signal, the first and second EGM frequency converters configured, in response thereto, to supply the first and second frequency modulated EGM data signals, respectively.

20. (Original) The monitor of Claim 19, wherein the frequency modulation circuit further comprises:

first and second filter circuits coupled to receive the first and second frequency modulated EGM data signals from the first and second EGM frequency converters, respectively, each filter circuit operable to supply a substantially sinusoidal frequency modulated EGM data signal.

21. (Original) The monitor of Claim 19, further comprising:

a dual-tone multi-frequency (DTMF) controller coupled to the sample-rate oscillator and fixed-frequency oscillator, the DTMF controller adapted to receive DTMF signals from a telephone line and operable, in response thereto, to selectively supply operator command signals to the sample-rate oscillator and the fixed-frequency oscillator,

wherein the sample-rate oscillator and fixed-frequency oscillator are each further operable, in response to the operator command signals, to selectively start and stop in response to the operator command signals.

22. (Original) The monitor of Claim 9, wherein the amplifier circuit is adapted to couple to a telephone line, to thereby supply the composite frequency modulated signal thereto.

23. (Original) A method of frequency modulating digital data transmitted from an implantable medical device (IMD), the method comprising the steps of:

periodically sampling the transmitted digital data to supply a sampled digital data value

initializing a counter to the sampled digital data value;

incrementing the counter at a fixed frequency until the counter reaches a predetermined value; and

generating a pulse each time the counter reaches the predetermined value.

24. (Original) The method of Claim 23, wherein the pulse that is generated each time the predetermined value is either a first value or a second value.

25. (Original) The method of Claim 24, wherein:

if the generated pulse is the first value, then the next generated pulse will be the second value; and

if the generated pulse is the second value, then the next generated pulse will be the first value.